

Atty. Docket No. MS305755.1/MSFTP523US

COLLAPSIBLE CONTAINER WITH A
SEMI-COLLAPSED VIEW

by

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Title: COLLAPSIBLE CONTAINER WITH A SEMI-COLLAPSED VIEW

TECHNICAL FIELD

5 The present invention relates generally to information viewing system(s), and more particularly, to a user interface system and method of displaying lists of information using a squeezed/semi-collapsed state of a group.

BACKGROUND OF THE INVENTION

10 Information viewing system(s) (*e.g.*, file viewer(s)) which allow grouping can permit group(s) to be collapsible such that the contents of a group can be individually shown or hidden. When the contents are shown, the group is said to be “expanded”; when the contents are collapsed, the group is said to be “collapsed.”

15 With the advent of extremely large storage devices and network-based storages, the need for working effectively with very long lists of items – such as those returned by a web search - is becoming increasingly important.

SUMMARY OF THE INVENTION

20 The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention. This summary is not an extensive overview of the invention. It is not intended to identify key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concepts of the invention in a simplified form as a prelude to the more detailed description that is presented later.

25 The present invention facilitates an improved user interface system and method of displaying lists of information using a squeezed/semi-collapsed state of the group that shows, for example, a portion of the group (*e.g.*, only the first few items of the group). The squeezed/semi-collapsed state takes up less room on the screen than an open state but gives the user more information about the group than the closed state, allowing more groups to be visible simultaneously while still providing detailed information about the
30 contents of the group.

An aspect of the present invention provides for an information viewer system that facilitates viewing of data set(s) in a semi-collapsed state. A data set can include for example, a logical and/or physical grouping of data item(s). The grouping can be based, for example, upon physical location (*e.g.*, disk drive), author, creation time/date, modification time/date, data item size, data item type, data item category and/or user criteria (*e.g.*, based on content of data item). A data item can be, for example, a file (*e.g.*, image and/or data).

The system includes a set component that identifies sets of data, and, a display component that displays the sets of data. For example, the display component can display at least one data set in a squeezed/semi-collapsed state.

The system can provide a mechanism for a user to rapidly scan and evaluate very long lists of information more quickly than existing mechanisms. The system can further provide architectural support for optimizing the computational cost of displaying large lists.

In one example, the system is employed as a file viewer, used for examining the contents of a hard drive in a graphical fashion. The system facilitates a displaying a squeezed/semi-collapsed state (*e.g.*, only the first few items of the group).

The squeezed/semi-collapsed state group takes up less room on the screen than an open state, but gives the user more information about the group than the closed state. This allows more groups to be visible simultaneously while still providing detailed information about the contents of the group. A user can quickly evaluate the groups in a large set of items, which in turn provides more efficient evaluation and manipulation of large groups of items.

Information displayed in the semi-collapsed view can be based, at least in part, for example, upon a user's preference. For example, a first user can prefer that substantially all display regions are viewed in the squeezed/semi-collapsed state, while, another a second user can prefer that a particular data set is displayed in the squeezed/semi-collapsed state. Further, information displayed in the semi-collapsed view can be based, at least in part, upon inference of a user's preference and/or user selection.

Additionally and/or alternatively information can be displayed in the semi-collapsed view based, at least in part, upon a user state. For example, a user having a

word processing application instantiated can view word processing application document(s) displayed in the squeeze/semi-collapsed state to facilitate easier selection of relevant document(s).

Further, a history of a user can be employed to determine information displayed in the semi-collapsed view. For example, a user that has historically preferred image file(s) displayed can have image file(s) displayed in the semi-collapsed state.

Also, a user's focus of attention can be employed to determine information displayed in the semi-collapsed view. For example, a user working with image based applications can have image file(s) displayed in the semi-collapsed view.

Optionally, information displayed in the semi-collapsed view can be color-coded to facilitate the user's viewing experience. Further, a quantity of data items displayed in the semi-collapsed view can be based, at least in part, upon a function of available display area, for example, to maximize relevant information presented to the user.

To the accomplishment of the foregoing and related ends, certain illustrative aspects of the invention are described herein in connection with the following description and the annexed drawings. These aspects are indicative, however, of but a few of the various ways in which the principles of the invention may be employed and the present invention is intended to include all such aspects and their equivalents. Other advantages and novel features of the invention may become apparent from the following detailed description of the invention when considered in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram of an information viewer system in accordance with an aspect of the present invention.

Fig. 2 is a diagram of user interface displaying a plurality of data sets in accordance with an aspect of the present invention.

Fig. 3 is a diagram of a user interface displaying a data set in accordance with an aspect of the present invention.

Fig. 4 is a diagram of an exemplary user interface in accordance with an aspect of the present invention.

Fig. 5 is a diagram of an exemplary user interface in accordance with an aspect of the present invention.

Fig. 6 is a diagram of an exemplary user interface in accordance with an aspect of the present invention.

5 Fig. 7 is a block diagram of an information viewer system in accordance with an aspect of the present invention.

Fig. 8 is a flow chart of a method that facilitates access to data in accordance with an aspect of the present invention.

10 Fig. 9 illustrates an example operating environment in which the present invention may function.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is now described with reference to the drawings, wherein like reference numerals are used to refer to like elements throughout. In the following
15 description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It may be evident, however, that the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to facilitate describing the present invention.

20 As used in this application, the terms “component,” “handler,” “model,” “system,” and the like are intended to refer to a computer-related entity, either hardware, a combination of hardware and software, software, or software in execution. For example, a component may be, but is not limited to being, a process running on a processor, a processor, an object, an executable, a thread of execution, a program, and/or
25 a computer. By way of illustration, both an application running on a server and the server can be a component. One or more components may reside within a process and/or thread of execution and a component may be localized on one computer and/or distributed between two or more computers. Also, these components can execute from various computer readable media having various data structures stored thereon. The components
30 may communicate *via* local and/or remote processes such as in accordance with a signal having one or more data packets (*e.g.*, data from one component interacting with another

component in a local system, distributed system, and/or across a network such as the Internet with other systems *via* the signal). Computer components can be stored, for example, on computer readable media including, but not limited to, an ASIC (application specific integrated circuit), CD (compact disc), DVD (digital video disk), ROM (read only memory), floppy disk, hard disk, EEPROM (electrically erasable programmable read only memory) and memory stick in accordance with the present invention.

Information viewing system(s) (*e.g.*, file viewer(s)) which allow grouping can permit group(s) to be collapsible such that the contents of a group can be individually shown or hidden. When the contents are shown, the group is said to be “expanded”; when the contents are collapsed, the group is said to be “collapsed.”

The present invention facilitates an improved user interface system and method of displaying long lists of information using a third squeezed/semi-collapsed state of the group that shows, for example, a portion of the group (*e.g.*, only the first few items of the group). In one example, a single button is clicked repeatedly to cycle between the expanded, squeezed/semi-collapsed, and collapsed states. The squeezed/semi-collapsed state takes up less room on the screen than an open state but gives the user more information about the group than the closed state, allowing more groups to be visible simultaneously while still providing detailed information about the contents of the group. While the present invention is generally described with respect to files, those skilled in the art will recognize that any item (*e.g.*, file(s) and/or image(s), such as photograph(s)) can be displayed in accordance with the present invention. It is to be appreciated that any type of item suitable for display by the system and/or method of the present invention can be employed and all such types of item(s) are intended to fall within the scope of the hereto appended claims.

Referring to Fig. 1, an information viewer system 100 in accordance with an aspect of the present invention is illustrated. The system 100 can facilitate viewing of data set(s) in a semi-collapsed state.

A data set can include for example, a logical and/or physical grouping of data item(s). The grouping can be based, for example, upon physical location (*e.g.*, disk drive), author, creation time/date, modification time/date, data item size, data item type, data item category and/or user criteria (*e.g.*, based on content of data item). A data item

can be, for example, a file (*e.g.*, image and/or data). For example, the data item can be associated with an image (*e.g.*, photograph) with the semi-collapsed view displaying a collage photo thumbnails and the expanded view displaying larger photos (*e.g.*, with additional information).

5 The system 100 includes a set component 110 that identifies sets of data, and, a display component 120 that displays the sets of data. For example, the display component 120 can display at least one data set in a squeezed/semi-collapsed state.

10 The system 100 can provide a mechanism for a user to rapidly scan and evaluate very long lists of information more quickly than existing mechanisms. The system 100 can further provide architectural support for optimizing the computational cost of displaying large lists.

15 In one example, the system 100 is employed as a file viewer, used for examining the contents of a hard drive in a graphical fashion. In conventional file viewers, the contents of a directory or of a file search is displayed as a continuous list of items. Some conventional file viewers have allowed grouping of items – separated into sections – according to a common attribute such as date or author.

20 In file viewers which allow grouping, groups can be “collapsible” – the contents of a group may be individually shown or hidden. When the contents are shown, the group is said to be “expanded”; when the contents are collapsed, the group is said to be “collapsed.”

 The system 100 facilitates a third state which shows a squeezed/semi-collapsed state (*e.g.*, only the first few items of the group). In one example, a single button is clicked repeatedly to cycle between the expanded, squeezed, and collapsed states.

25 An advantage of the squeezed/semi-collapsed state is that the group takes up less room on the screen than an open state, but gives the user more information about the group than the closed state. This allows more groups to be visible simultaneously while still providing detailed information about the contents of the group. A user can quickly evaluate the groups in a large set of items, which in turn provides more efficient evaluation and manipulation of large groups of items.

30 Information displayed in the semi-collapsed view can be based, at least in part, for example, upon a user’s preference. For example, a first user can prefer that substantially

all display regions are viewed in the squeezed/semi-collapsed state, while, another a second user can prefer that a particular data set is displayed in the squeezed/semi-collapsed state. Further, information displayed in the semi-collapsed view can be based, at least in part, upon inference of a user's preference and/or user selection.

5 Additionally and/or alternatively information can be displayed in the semi-collapsed view based, at least in part, upon a user state. For example, a user having a word processing application instantiated can view word processing application document(s) displayed in the squeeze/semi-collapsed state to facilitate easier selection of relevant document(s).

10 Further, a history of a user can be employed to determine information displayed in the semi-collapsed view. For example, a user that has historically preferred image file(s) displayed can have image file(s) displayed in the semi-collapsed state.

 Also, a user's focus of attention can be employed to determine information displayed in the semi-collapsed view. For example, a user working with image based applications can have image file(s) displayed in the semi-collapsed view.

15 Optionally, information displayed in the semi-collapsed view can be color-coded to facilitate the user's viewing experience. Further, a quantity of data items displayed in the semi-collapsed view can be based, at least in part, upon a function of available display area, for example, to maximize relevant information presented to the user.

20 It is to be appreciated that the system 100, the set component 110 and/or the display component 120 can be computer components as that term is defined herein.

 Turning briefly to Fig. 2, a user interface 200 displaying a plurality of data sets 210 is illustrated. In this example, the data sets 210 are displayed in a collapsed state such that information associated with individual item(s) of the data sets 210 is not displayed.

25 Next, referring briefly to Fig. 3, a user interface 300 displaying a data set 310 is illustrated. In this example, the data set 310 is displayed in an expanded state such that information associated with data item(s) 320 is displayed. The data item(s) can be, for example, file(s) with the information associated with the data item(s) 320 including a type of file, category of file, physical and/or logical location of the file, and, date/time associated with the file.

Referring to Fig. 4, an exemplary user interface 400 in accordance with an aspect of the present invention is illustrated. The user interface 400 includes a first data set 410 displayed in a collapsed state and a second data set 420 displayed in a squeezed/semi-expanded state. In the squeezed/semi-expanded state, some of the data items 430 that
5 comprise the second data set 420 are displayed while other data items that comprise the second data set 420 are not displayed.

Turning to Fig. 5, an exemplary user interface 500 in accordance with an aspect of the present invention is illustrated. The user interface 500 includes a data set 510 in a squeezed/semi-expanded state. In this example, file name, location and date are
10 displayed for data items 520 that are visible in the squeezed/semi-expanded state.

Navigation of squeezed/semi-expanded data set(s)

User interface(s) and/or input device(s) (*e.g.*, mouse and/or keyboard) can be employed to facilitate navigation of data set(s) displayed in the squeezed/semi-expanded state. Referring to Fig. 6, an exemplary user interface 600 in accordance with an aspect
15 of the present invention is illustrated. In this example, a scroll bar 610 facilitates navigation through a data set 620 having a plurality of data items 630. The scroll bar can allow viewing of data item(s) hidden by the squeeze/semi-expanded state.

Additionally and/or alternatively, the user interface 600 can further include a
20 control 640 that facilitates scrolling through the plurality of data items 630. For example, in response to a user placing a pointing device's cursor in proximity of and/or over the control 640, the data set 620 can be presented (*e.g.*, scrolled). The speed of the presentation (*e.g.*, scrolling) can be based, for example, up a user's preference and/or upon a length of time that the control 640 has been active.

Turning briefly to Fig. 7, an information viewer system 700 in accordance with an aspect of the present invention is illustrated. The system 700 includes a set component
25 110, a display component 120 and input device(s) 710.

The input device(s) 710 can facilitate viewing of data set(s) in a semi-collapsed state. For example, arrow and/or cursor key(s) on a keyboard allow a viewer to show
30 previously hidden items in the group by selecting a visible item and pressing a cursor key

to select the next or previous item in the group. As hidden items are selected, they are moved vertically in the group to become visible.

It is to be appreciated that the system 700 and/or the input device(s) 710 can be computer components as that term is defined herein.

5 Turning briefly to Fig. 8, a methodology that may be implemented in accordance with the present invention are illustrated. While, for purposes of simplicity of explanation, the methodologies are shown and described as a series of blocks, it is to be understood and appreciated that the present invention is not limited by the order of the blocks, as some blocks may, in accordance with the present invention, occur in different
10 orders and/or concurrently with other blocks from that shown and described herein. Moreover, not all illustrated blocks may be required to implement the methodologies in accordance with the present invention.

The invention may be described in the general context of computer-executable instructions, such as program modules, executed by one or more components. Generally,
15 program modules include routines, programs, objects, data structures, *etc.* that perform particular tasks or implement particular abstract data types. Typically the functionality of the program modules may be combined or distributed as desired in various embodiments.

Referring to Fig. 8, a method that facilitates access to data 800 in accordance with an aspect of the present invention is illustrated. At 810, sets of data items are identified
20 (*e.g.*, by a set component 110). At 820, at least one of the sets is displayed in a semi-collapsed state (*e.g.*, by a display component 120).

In order to provide additional context for various aspects of the present invention, Fig. 9 and the following discussion are intended to provide a brief, general description of a suitable operating environment 910 in which various aspects of the present invention
25 may be implemented. While the invention is described in the general context of computer-executable instructions, such as program modules, executed by one or more computers or other devices, those skilled in the art will recognize that the invention can also be implemented in combination with other program modules and/or as a combination of hardware and software. Generally, however, program modules include routines,
30 programs, objects, components, data structures, *etc.* that perform particular tasks or implement particular data types. The operating environment 910 is only one example of

a suitable operating environment and is not intended to suggest any limitation as to the scope of use or functionality of the invention. Other well known computer systems, environments, and/or configurations that may be suitable for use with the invention include but are not limited to, personal computers, hand-held or laptop devices,
5 multiprocessor systems, microprocessor-based systems, programmable consumer electronics, network PCs, minicomputers, mainframe computers, distributed computing environments that include the above systems or devices, and the like.

With reference to Fig. 9, an exemplary environment 910 for implementing various aspects of the invention includes a computer 912. The computer 912 includes a
10 processing unit 914, a system memory 916, and a system bus 918. The system bus 918 couples system components including, but not limited to, the system memory 916 to the processing unit 914. The processing unit 914 can be any of various available processors. Dual microprocessors and other multiprocessor architectures also can be employed as the processing unit 914.

15 The system bus 918 can be any of several types of bus structure(s) including the memory bus or memory controller, a peripheral bus or external bus, and/or a local bus using any variety of available bus architectures including, but not limited to, an 8-bit bus, Industrial Standard Architecture (ISA), Micro-Channel Architecture (MSA), Extended
20 ISA (EISA), Intelligent Drive Electronics (IDE), VESA Local Bus (VLB), Peripheral Component Interconnect (PCI), Universal Serial Bus (USB), Advanced Graphics Port (AGP), Personal Computer Memory Card International Association bus (PCMCIA), and Small Computer Systems Interface (SCSI).

The system memory 916 includes volatile memory 920 and nonvolatile memory 922. The basic input/output system (BIOS), containing the basic routines to transfer
25 information between elements within the computer 912, such as during start-up, is stored in nonvolatile memory 922. By way of illustration, and not limitation, nonvolatile memory 922 can include read only memory (ROM), programmable ROM (PROM), electrically programmable ROM (EPROM), electrically erasable ROM (EEPROM), or flash memory. Volatile memory 920 includes random access memory (RAM), which
30 acts as external cache memory. By way of illustration and not limitation, RAM is available in many forms such as synchronous RAM (SRAM), dynamic RAM (DRAM),

synchronous DRAM (SDRAM), double data rate SDRAM (DDR SDRAM), enhanced SDRAM (ESDRAM), Synchlink DRAM (SLDRAM), and direct Rambus RAM (DRRAM).

Computer 912 also includes removable/nonremovable, volatile/nonvolatile computer storage media. Fig. 9 illustrates, for example a disk storage 924. Disk storage 924 includes, but is not limited to, devices like a magnetic disk drive, floppy disk drive, tape drive, Jaz drive, Zip drive, LS-100 drive, flash memory card, or memory stick. In addition, disk storage 924 can include storage media separately or in combination with other storage media including, but not limited to, an optical disk drive such as a compact disk ROM device (CD-ROM), CD recordable drive (CD-R Drive), CD rewritable drive (CD-RW Drive) or a digital versatile disk ROM drive (DVD-ROM). To facilitate connection of the disk storage devices 924 to the system bus 918, a removable or non-removable interface is typically used such as interface 926.

It is to be appreciated that Fig 9 describes software that acts as an intermediary between users and the basic computer resources described in suitable operating environment 910. Such software includes an operating system 928. Operating system 928, which can be stored on disk storage 924, acts to control and allocate resources of the computer system 912. System applications 930 take advantage of the management of resources by operating system 928 through program modules 932 and program data 934 stored either in system memory 916 or on disk storage 924. It is to be appreciated that the present invention can be implemented with various operating systems or combinations of operating systems.

A user enters commands or information into the computer 912 through input device(s) 936. Input devices 936 include, but are not limited to, a pointing device such as a mouse, trackball, stylus, touch pad, keyboard, microphone, joystick, game pad, satellite dish, scanner, TV tuner card, digital camera, digital video camera, web camera, and the like. These and other input devices connect to the processing unit 914 through the system bus 918 via interface port(s) 938. Interface port(s) 938 include, for example, a serial port, a parallel port, a game port, and a universal serial bus (USB). Output device(s) 940 use some of the same type of ports as input device(s) 936. Thus, for example, a USB port may be used to provide input to computer 912, and to output information from computer

912 to an output device 940. Output adapter 942 is provided to illustrate that there are some output devices 940 like monitors, speakers, and printers among other output devices 940 that require special adapters. The output adapters 942 include, by way of illustration and not limitation, video and sound cards that provide a means of connection between the output device 940 and the system bus 918. It should be noted that other devices and/or systems of devices provide both input and output capabilities such as remote computer(s) 944.

Computer 912 can operate in a networked environment using logical connections to one or more remote computers, such as remote computer(s) 944. The remote computer(s) 944 can be a personal computer, a server, a router, a network PC, a workstation, a microprocessor based appliance, a peer device or other common network node and the like, and typically includes many or all of the elements described relative to computer 912. For purposes of brevity, only a memory storage device 946 is illustrated with remote computer(s) 944. Remote computer(s) 944 is logically connected to computer 912 through a network interface 948 and then physically connected *via* communication connection 950. Network interface 948 encompasses communication networks such as local-area networks (LAN) and wide-area networks (WAN). LAN technologies include Fiber Distributed Data Interface (FDDI), Copper Distributed Data Interface (CDDI), Ethernet/IEEE 802.3, Token Ring/IEEE 802.5 and the like. WAN technologies include, but are not limited to, point-to-point links, circuit switching networks like Integrated Services Digital Networks (ISDN) and variations thereon, packet switching networks, and Digital Subscriber Lines (DSL).

Communication connection(s) 950 refers to the hardware/software employed to connect the network interface 948 to the bus 918. While communication connection 950 is shown for illustrative clarity inside computer 912, it can also be external to computer 912. The hardware/software necessary for connection to the network interface 948 includes, for exemplary purposes only, internal and external technologies such as, modems including regular telephone grade modems, cable modems and DSL modems, ISDN adapters, and Ethernet cards.

What has been described above includes examples of the present invention. It is, of course, not possible to describe every conceivable combination of components or

methodologies for purposes of describing the present invention, but one of ordinary skill in the art may recognize that many further combinations and permutations of the present invention are possible. Accordingly, the present invention is intended to embrace all such alterations, modifications and variations that fall within the spirit and scope of the
5 appended claims. Furthermore, to the extent that the term “includes” is used in either the detailed description or the claims, such term is intended to be inclusive in a manner similar to the term “comprising” as “comprising” is interpreted when employed as a transitional word in a claim.